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27 January 1967

MEMORANDUM FOR: Deputy Chief, Development Staff, TDS

SUBJECT: Recommendations for GEMS Project

1. Your memorandum of 18 January requested comments and recommendations on the [] GEMS project, Change of Scope. I have already recommended to [] that the Change of Scope be authorized, but I will add some comments for your benefit and try to give you an idea of what has occurred.

2. The GEMS project started out well but soon ran into difficulty when [] the Project Engineer in charge, left []. It was not a case of an incompetent replacement as much as it was one of over-direction by []. His successor, [] now has the project in a firm grasp, but he underwent a period of education which materially affected project results. Recently, [] has contributed some useful theoretical considerations in support of [] but which, while based in fact, tend to lack the practicality associated with [] work. [] and I have continually reminded them about the two basic problems that we wished solved: the establishment of uniqueness and a critical specification of the optimum spacing between the GEMS matrix elements. In pursuance of this, [] had made a GEMS set which was to be tested by [] at NPIC. Discussions with [] indicated the set to be inadequate, and they recommended that another set be made. [] agreed with those conclusions, as did [] and I. It was at this time that the problem of the GEMS Master and its processing at unity gamma became more fully defined. I feel this should have been known sooner, but because of the project leadership change the circumstances are probably extenuating. At my request [] carried out an analysis based on a GEMS Master not processed to unity gamma, and their results satisfied me that that approach was not feasible to complete a GEMS matrix whose coverage would be sufficient for our purposes. It was after the result of this analysis that the present Change of Scope was requested. I do not consider this the case of failure on [] part but rather the "unexpected" which invariably occurs in a research program of this nature. We could ask [] to "brute-force" their way into a GEMS matrix but I think you will agree that it is probably not the way to go.

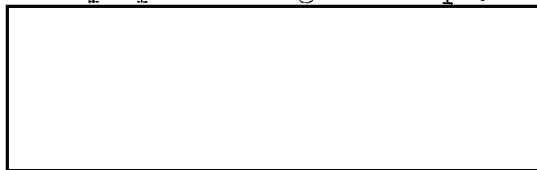
3. The need still exists for the GEMS technique. TID is more convinced than ever that it will be useful when produced, and nothing to replace it has been proposed since the inception of the program.

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4. I feel we may have pushed the state-of-the-art a little too far, a little too fast in asking for an immediate "hardware" end-product: we still have several fundamental questions to answer. I believe there is merit in the pseudo-GEMS technique and that the re-direction of the project effort into that area will not be a wasted effort. Work will continue (but at a reduced level of effort) on the problem of the unity gamma processing for the GEMS Master, and we may yet be forced to fly special missions to acquire suitable photographs. While I cannot guarantee success of this program, because it is too early to make a definite statement either way, I feel we should continue the project, following that program outlined in the proposed Change of Scope.



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Chief, Exploratory Development Laboratory, TDS

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